

Date: Wednesday, 19/11/2008 10:09:29 AM
 User: Julie Dawson

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services	Drawing Name : BUBBLE WINDOW, RH
Job Number : 43546	
Estimate Number : 11394	
P.O. Number :	Part Number : D32692
This Issue : 19/11/2008 S.O. No. :	Drawing Number : D3269
Prsht Rev. : NC	Project Number : N/A
First Issue : / / Type : THERMOFORMING	Drawing Revision : D/B
Previous Run : 40803	Material :
Written By :	Due Date : 21/11/2008 Qty: 1 Um: Each
Checked & Approved By : <u>JUD 08.11.19</u>	
Comment : Est. A 05.03.22 New issue KJ/JLM	
Est B 05.05.09 Added engraving EC	
Est Rev:06-07-03 As per Rev C JLM	
Est C 07.11.06 Thermoform in-house DL verified by:EC	
Est. Rev: D 08.07.24 As per New Tool DL	

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
----------------	------------------------------	----------------------

1.0	HAND FINISH TH	HAND FINISHING THERMOFORMING
-----	----------------	------------------------------

**Comment:** HAND FINISHING THERMOFORMING

Set up Clamping Frame and Load Program
 as per Folio FTA 014

Wh. 08/11/19

2.0	MACRYLICS177	0.177" PLEXIGLAS G CLEAR CAST ACRYLIC SH
-----	--------------	--

**Comment:** Qty.: 10.0000 sf(s)/Unit Total: 10.0000 sf(s)

0.177" PLEXIGLAS G CLEAR CAST ACRYLIC SH / on 188" Dhw

1) Batch # M 108784

Wh. 08/11/19

3.0	HAND FINISH TH	HAND FINISHING THERMOFORMING
-----	----------------	------------------------------

**Comment:** HAND FINISHING THERMOFORMING

1) Cut Blanks to 30" by 48"

BB 08/11/19 (X1)

4.0	THERMOFORMING	THERMOFORMING MACHINE
-----	---------------	-----------------------

**Comment:** THERMOFORMING MACHINE

Thermoform as per Dwg. D3269 and Folio FTA 014

Dwg. Rev. DFolio Rev. C

Wh. 08/11/19

(X1)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Wednesday, 19/11/2008 10:09:29 AM

User: Julie Dawson

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: BUBBLE WINDOW, RH

Job Number: 43546

Part Number: D32692

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

QC2

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

1) Check Surface finish for undesired marks, voids, dimples etc.

2) Check depth of bubble to ensure conformity to drawing tolerances.

OK 08/11/19

(X1)

6.0

QC8

SECOND CHECK



Comment: SECOND CHECK

BB 08/11/19 (X1)

7.0

HAND FINISH TH

HAND FINISHING THERMOFORMING



Comment: HAND FINISHING THERMOFORMING

1) Trim off excess flange material

2) Buff out any light scratches or blemishes

3) Etch part number and batch number

OK 08/11/20

(X1)

8.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

1) Visually inspect for clarity, and proper formation.

Soss/wal (X1)

9.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

PPP 43544 18 08/11/21

(X1)

10.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

08/11/26

Job Completion



MF 08-11-24

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART

DESIGN <i>qp</i>	DRAWN BY LE	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>qp</i>	APPROVED <i>H</i>	DRAWING NO. DSI 9329	REV. B SHEET 1 OF 1
DATE 06.06.26	TITLE BUBBLE WINDOW INSTALL MOD.	SCALE NTS	
A	06.04.25	NEW ISSUE	
B	06.06.26	CHG TO EFFECTIVE AFTER CHG 002	

DART SERVICE INSTRUCTION
TO AMEND INSTALLATION INSTRUCTIONS IIN-D044-713 REV. A
REF. CANADIAN STC: SH05-13 ISSUE 1
REF. FAA STC: SR02088NY

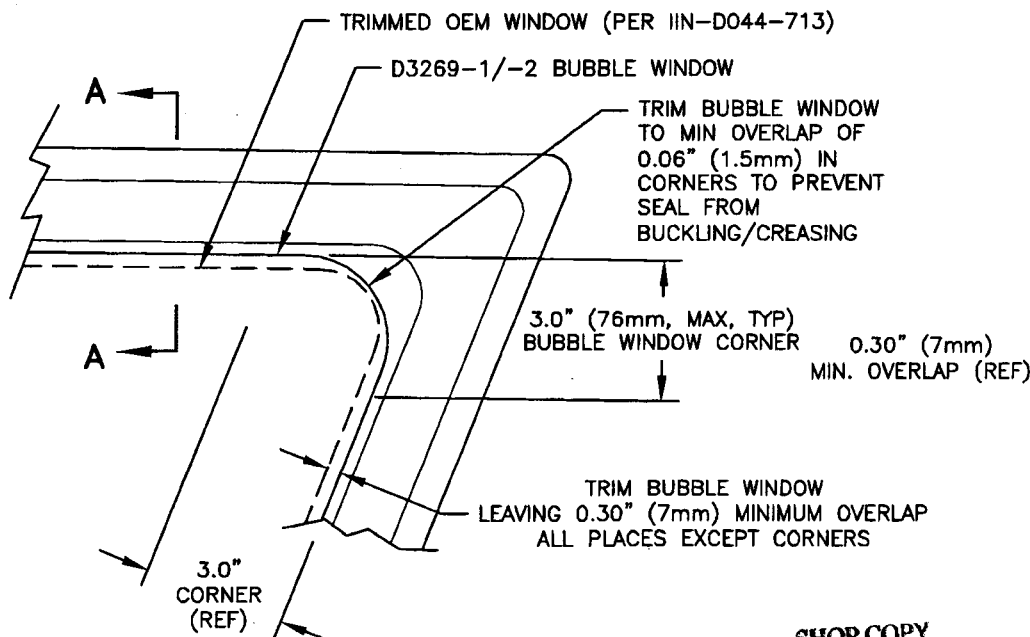
PURPOSE: For the D044-713-013/-014 kits supplied after CHG 002, the D3267-1/-2 bubble windows have been supplied untrimmed to allow for easier installation in the field. The installer must trim the windows in accordance with these instructions prior to installation.

PROCEDURE:

- 1) Modify the R44 crew door per items 3.2.1 and 3.2.2 of Installation Instructions IIN-D044-713 Rev.A.
- 2) Fit and trim the D3269-1/-2 Bubble Window to match the cutout in the door as follows: The bubble window must be a minimum of 0.30" (7mm) larger than the cutout in the OEM window as shown in the figure below. However, in the corners of the window, it is acceptable to trim a 0.06" minimum overlap (1.5mm) to help prevent the D2126-0903 Seal from buckling/creasing in the corners. The edge of the bubble window must be deburred to a smooth finish.
- 3) Continue installing the bubble window per items 3.2.3 through 3.2.5 of the installation instructions.

FIGURE 1

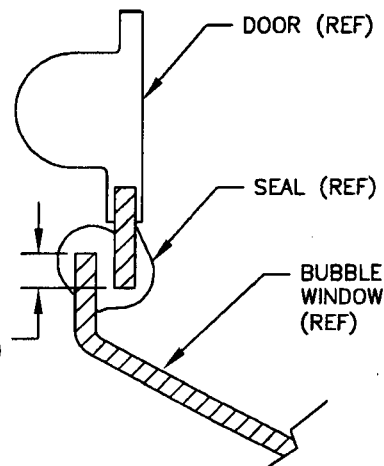
LOOKING AT INSIDE CORNER OF DOOR



SECTION A-A

(NOT TO SCALE)

OUTBOARD



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WORK ORDER
NO. 43546

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION
BRANCH
DAO # 01-Q-01

APPROVED

BY: *D. Shepherd*
D. SHEPHERD (DE # 02)

DATE: 06.06.26
CERT. NO.: SH05-13
ISSUE NO.: 1

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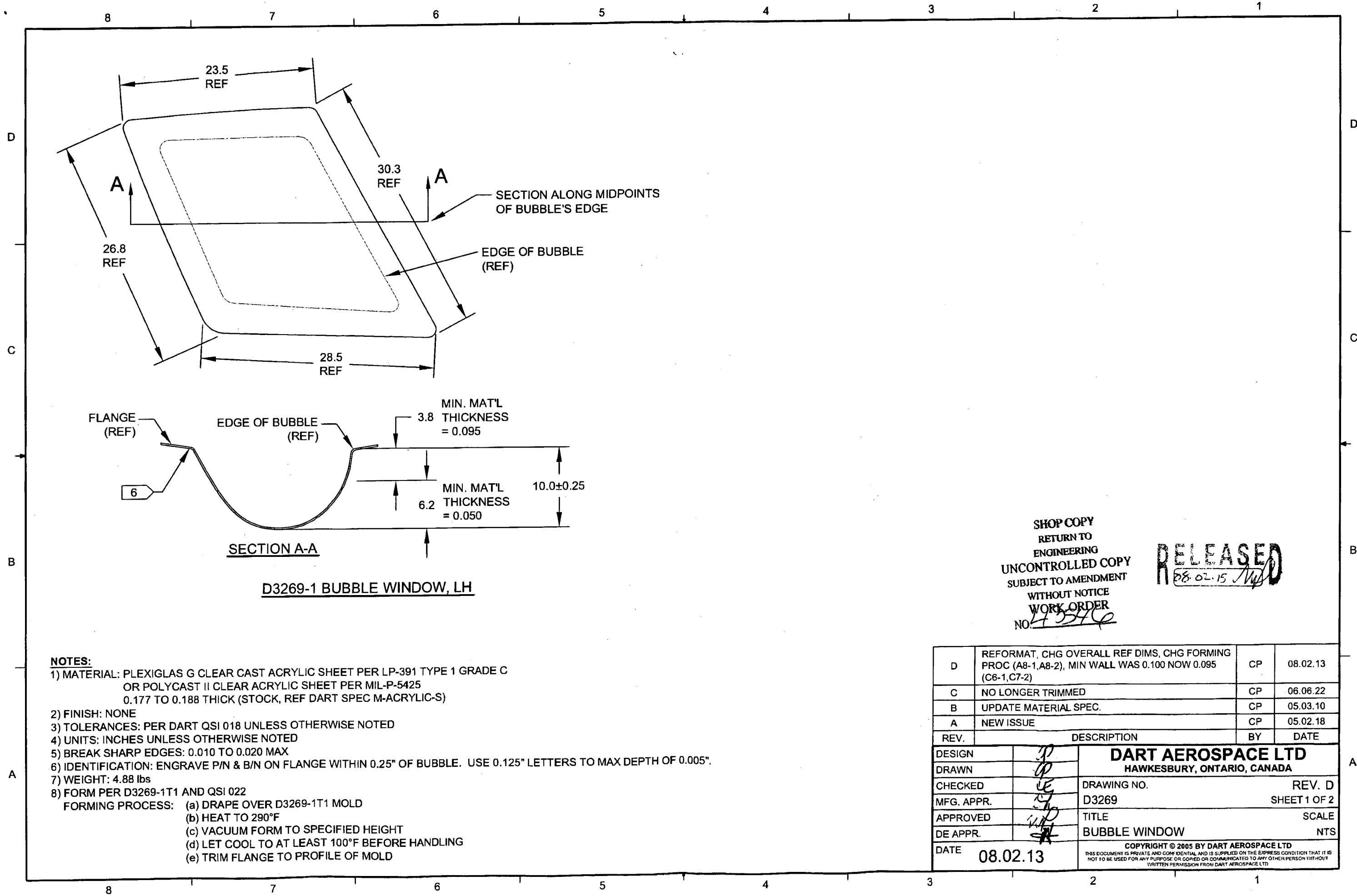
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



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WORK ORDER
NO. 4576

RELEASED
08-02-15

NOTES:

- 1) MATERIAL: PLEXIGLAS G CLEAR CAST ACRYLIC SHEET PER LP-391 TYPE 1 GRADE C
OR POLYCAST II CLEAR ACRYLIC SHEET PER MIL-P-5425
0.177 TO 0.188 THICK (STOCK, REF DART SPEC M-ACRYLIC-S)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.010 TO 0.020 MAX
- 6) IDENTIFICATION: ENGRAVE P/N & B/N ON FLANGE WITHIN 0.25" OF BUBBLE. USE 0.125" LETTERS TO MAX DEPTH OF 0.005".
- 7) WEIGHT: 4.88 lbs
- 8) FORM PER D3269-1T1 AND QSI 022
FORMING PROCESS: (a) DRAPE OVER D3269-1T1 MOLD
(b) HEAT TO 290°F
(c) VACUUM FORM TO SPECIFIED HEIGHT
(d) LET COOL TO AT LEAST 100°F BEFORE HANDLING
(e) TRIM FLANGE TO PROFILE OF MOLD

D	REFORMAT, CHG OVERALL REF DIMS, CHG FORMING PROC (A8-1, A8-2), MIN WALL WAS 0.100 NOW 0.095 (C6-1, C7-2)	CP	08.02.13
C	NO LONGER TRIMMED	CP	06.06.22
B	UPDATE MATERIAL SPEC.	CP	05.03.10
A	NEW ISSUE	CP	05.02.18
REV.	DESCRIPTION	BY	DATE
DESIGN	JP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	JP		
CHECKED	JP	DRAWING NO.	REV. D
MFG. APPR.	JP	D3269	SHEET 1 OF 2
APPROVED	JP	TITLE	SCALE
DE APPR.	JP	BUBBLE WINDOW	NTS
DATE	08.02.13	COPYRIGHT © 2005 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	

8

7

6

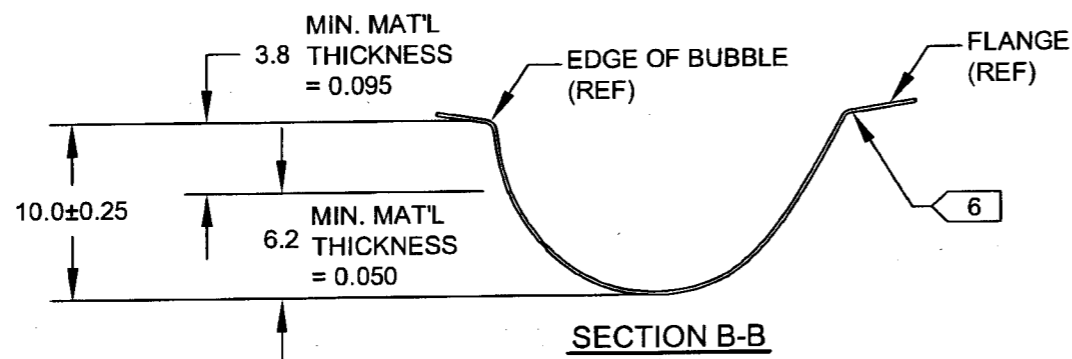
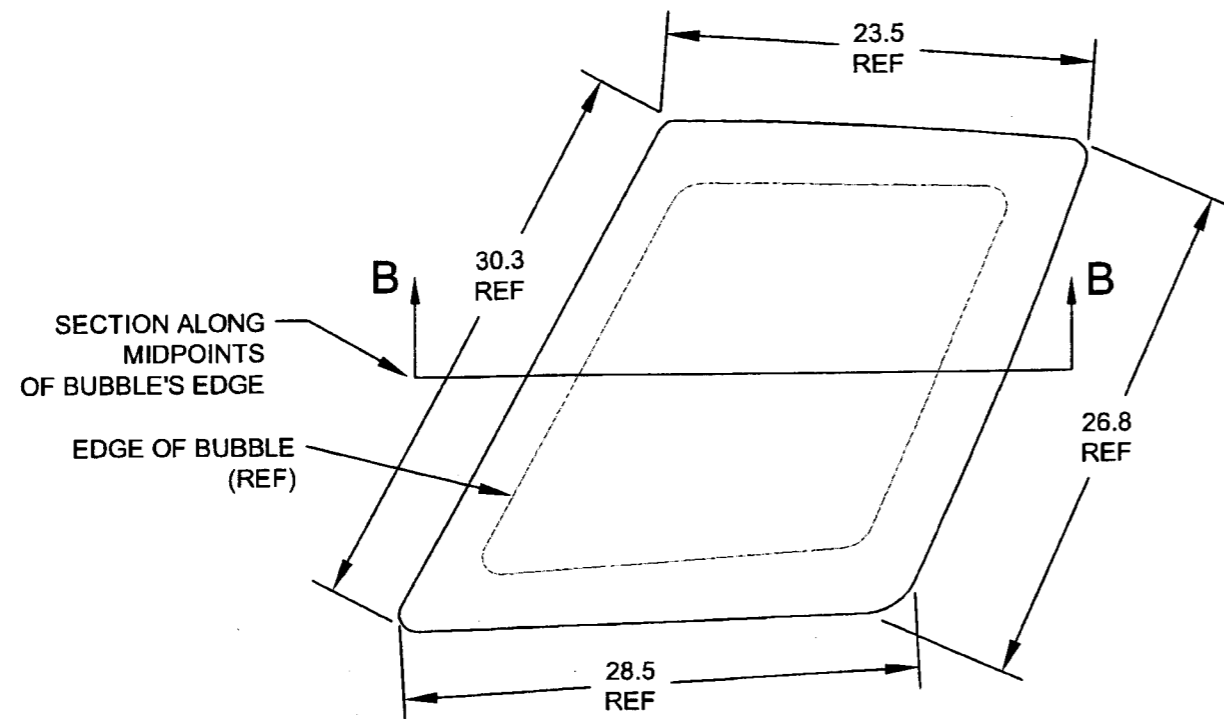
5

4

3

2

1



D3269-2 BUBBLE WINDOW, RH

NOTES

- 1) MATERIAL: PLEXIGLAS G CLEAR CAST ACRYLIC SHEET PER LP-391 TYPE 1 GRADE C OR POLYCAST II CLEAR ACRYLIC SHEET PER MIL-P-5425
0.177 TO 0.188 THICK (STOCK, REF DART SPEC M-ACRYLIC-S)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.010 TO 0.020 MAX
- 6) IDENTIFICATION: ENGRAVE P/N & B/N ON FLANGE WITHIN 0.25" OF BUBBLE. USE 0.125" LETTERS TO MAX DEPTH OF 0.005".
- 7) WEIGHT: 4.88 lbs
- 8) FORM PER D3269-2T1 AND QSI 022
FORMING PROCESS: (a) DRAPE OVER D3269-2T1 MOLD
(b) HEAT TO 290°F
(c) VACUUM FORM TO SPECIFIED HEIGHT
(d) LET COOL TO AT LEAST 100°F BEFORE HANDLING
(e) TRIM FLANGE TO PROFILE OF MOLD

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RELEASED
08.02.13

DESIGN		DART AEROSPACE LTD	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. D
MFG. APPR.		D3269	SHEET 2 OF 2
APPROVED		TITLE	SCALE
DE APPR.		BUBBLE WINDOW	NTS
DATE	08.02.13	COPYRIGHT © 2005 BY DART AEROSPACE LTD	
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DART AEROSPACE LTD		WORK ORDER: 43546
Description: R 44 Bubble Window RH		Part Number: D3269-2
Inspection Dwg: D3269	Rev: D	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

(Step 4) Thermoforming
Visual Inspection Sign-off

Description	Initials
Depth of bubble within tolerances	Wb
Acceptable shape definition	Wb
Free of visual flaws (bumps, cracks, voids, etc.)	Wb

(Step 6) Trimming
FAI Checklist

Inspect dimensions highlighted on inspection sheet drawing D3269 Rev. D and record below

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
depth of bubble 10"	+/- 0.25"	10.125	✓			
23.5	REF +/- 0.100	23.5	✓			
26.8	REF +/- 0.100	26.5	✓			
28.5	REF +/- 0.100	28.25	✓			
30.3	REF +/- 0.100	30.5	✓			
top 6.2" of bubble	0.050" Min	.050	✓			
Lower 3.8" of bubble	0.095" Min	.103	✓			

Measured by: Wb	Audited by: S	Prototype Approval: M
Date: 08/11/20	Date: 08/11/21	Date: 11/20

Rev	Date	Change	Revised by	Approved
		New Issue		

Wb